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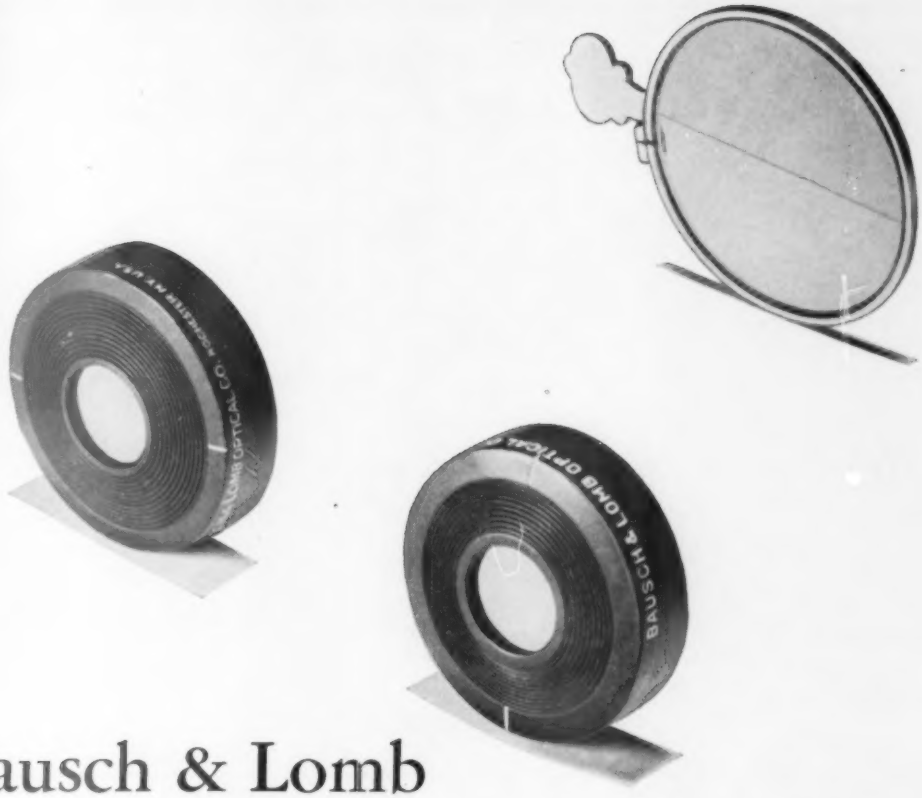

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THE AMERICAN BIOLOGY TEACHER

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Evaluating Motion Pictures for Biological Science

D. W. McCAVICK
Visual Instruction Bureau, University of Texas

In evaluating films for biological science we must first establish the criteria for our evaluation. As far as we know, the same general criteria may be applied in evaluating films for any subject. Motion pictures are valuable when movements and actions must be shown for complete understanding; to combine two or more activities and relate them together; to speed up or slow down some action; to animate or picture processes and to add sounds that are necessary either for explanation or synchronized sounds of the object or activity pictured.

If a motion picture is the device needed for our purpose and the only one that will completely fill our need, then we should select and evaluate it on the basis of the *purpose or objectives* of the film itself, the *grade placement or age level*, the *truth or authenticity* of the material presented, the *specific content* and the *organization* of this content, the *length or time* required to adequately present the film, the *pictorial and technical quality* of the production and general considerations such as *teacher helps or aids.*

THE OBJECTIVES for biological science are well established and, therefore, most educational motion pictures produced in this field have a definite purpose. In rating a film on this point, we should consider the clarity of the aim or purpose, the number of specific objectives and the pupil reaction and participation in terms of their preparation and experience to this particular treatment of the subject or topic.

THE GRADE PLACEMENT OR AGE LEVEL is a difficult point to determine, for even within a group at a specified grade, we find a wide range in their abilities, needs and interests. A good teacher may also adapt material designed for a given grade to a higher or lower leved by the right preparation and presentation. This point should be restricted to a general conclusion such as primary, elementary, junior high or high school. The teacher then may decide finally

at a preview before using the film whether it is adapted to her particular group. The points to consider are vocabulary, correlation and integration with the course of study, and the experience and background necessary for understanding the concepts presented.

THE TRUTH OR AUTHENTICITY may be checked by the text used for the course, investigating the standing of the editor of the film or by having the film previewed by experts or authorities in the field. Most educational films available for biology are accurate and the principal consideration for this point may be the presentation or emphasis placed on the facts presented.

THE ORGANIZATION of the specific content of a film should lead in an orderly fashion to a definite conclusion. All facts presented must be related to the topic and be necessary for complete understanding of that topic in terms of the objectives of the film. The sound, silent titles, or both, should combine with the scenes and sequences in proper order to give unity to the film. We should consider the narration and sound accompaniment, the silent titles, advertising or objectionable elements, unnecessary repetition of facts, the organization, continuity and development of the facts related to a concept and to the objectives of the whole production and the emphasis on the concepts presented.

THE LENGTH of the film and the time required for projecting the films are in direct proportion. Sound projectors operate at twenty-four frames per second and project four hundred feet of sound film in eleven minutes. Silent projectors frequently have a rheostat and may be adjusted, but in general the speed should be at the rate of sixteen frames per second, which would propect four hundred feet of silent film in sixteen minutes. The grade placement or age level and the complexity of the subject matter should determine the length of a film. Not more than one reel or four hundred feet of film should be used at a time for young children, as their attention span is very short. Scientific or highly technical films must be short enough to allow sufficient time for the preparation and follow-up activities that are necessary for complete utilization of the film subject. Except for review purposes, no more than one reel of film should be planned for one class period in biological science.

FOR THE PICTORIAL AND TECHNICAL phases of the production, we should check the length of the scenes, the lighting and definition of the principal object or subject, the composition, the sound, animation, silent titles, and the artistic composition of the film as a whole. The scenes must be long enough for the average student to assimilate the information presented, but not too long so as to drag and tire the student. All scenes must be in sharp focus and the light should be uniform and bright enough to prevent eyestrain. The composition should be pleasing and harmonious to the eye. The sound must be clear, distinct with very low or no background noise, and if incidental music is provided it must be in keeping with the subject and should never by so loud or disturbing as to take your attention from the picture. Animation to be effective must be smooth, accurate, and in good taste. Silent titles or sub-titles to sound films should be brief and to the point. Titles may be artistic but should not be confusing. The finished production must not detract from the subject presented. It must be pleasing to the eye without the gadgets of the entertainment type of film. A supercolossal production may not be a good educational motion picture for classroom use.

A good film should stimulate discus-

sion and give the teacher an opportunity to develop and expand the topic or subject. Films with teachers' guides or for which visual learning guides are available save time for the teacher as suggestions for things to look for, words to be studied, test questions, topics for discussion, follow-up activities and references are given. A film should not be designed or used as an end in itself but for the information and stimulation to further study that it may furnish.

Films may be evaluated by an authority in the field; by a committee or group of teachers, authorities or specialists; by the teacher planning to use the material; by the students using the material; by a combination plan; or by research and

Film Analysis and Evaluation Chart

1. _____ Exact Title _____ General Content

2. _____ Time in minutes or length in feet _____ Size in mm.
Sound_____ Silent_____

3. _____ Produced by: _____ Cost _____ Rental

4. Study Guide Yes_____ No_____ Year Produced_____

6. _____ Subjects or Fields Adapted for _____ Grade or Age Level

6. Specific Content_____

_____

7. Purpose or Objective_____

8. Truth or Authenticity
Excellent_____ Good_____ Fair_____ Poor_____

9. Organization Excellent_____ Good_____ Fair_____ Poor_____

10. Pictorial and Technical Quality
Excellent_____ Good_____ Fair_____ Poor_____

11. Student or Class Reaction
Excellent_____ Good_____ Fair_____ Poor_____

12. Rating Value Excellent_____ Good_____ Fair_____ Poor_____

Appeal Excellent_____ Good_____ Fair_____ Poor_____

Information
Excellent_____ Good_____ Fair_____ Poor_____

Adaptation
Excellent_____ Good_____ Fair_____ Poor_____

13. Final Rating Excellent_____ Good_____ Fair_____ Poor_____

14. Comments_____

testing. The most common methods are for a committee or individual to view the film and rate it on a check list or evaluation chart.

An evaluation chart to be of maximum value must be readily understood, complete enough to give the information needed for the evaluation and easy to check. The criteria for the evaluation must be explained in detail to the evaluating organization but only the principal points need to be listed on the chart.

The following suggestions may be incorporated into a form to fit the needs of the teacher or evaluating committee. (The blanks are to be filled in and the other items checked.)

The final rating is a summary of all points considered in evaluating the film. A point scale or weighing of the items might be of some value in case the film is at a mid-point on the chart, e.g. between excellent and good, good and fair, or fair and poor. The limiting factor for all charts of this type is the subjective reasoning required for many items, therefore, the final rating in any case will be conditioned by the individual or group evaluating the film.

Films for Biological Science

The following films have been previewed, evaluated and used in the classroom by the writer:

General Biology

Title	*Produced by:*	*Year*	*Rating*
1. Animals in Modern Life	Encyclopaedia Britannica	1937	Good
2. Animals of the Zoo	Encyclopaedia Britannica	1933	Good
3. The Battle of the Centuries	Teaching Film Custodians	1932	Good
4. Beavers at Home	U. S. Dept. of Agriculture	1934	Good
5. Beneath Our Feet	Teaching Film Custodian	1933	Good
6. Birds of Prey	Encyclopaedia Britannica	1938	Good
7. Butterflies	Encyclopaedia Britannica	1931	Good
8. The Dodder	Encyclopaedia Britannica	1931	Good
9. Flowers at Work	Encyclopaedia Britannica	1931	Good
10. The Frog	Encyclopaedia Britannica	1931	Excellent
11. Frogs, Toads and Salamanders	Eastman-Encyclopaedia Britannica	1932	Good
12. The Honey Bee	Encyclopaedia Britannica	1940	Excellent
13. The House-fly	Encyclopaedia Britannica	1935	Good
14. How Animal Life Begins	U. S. Dept. of Agriculture	1939	Good
15. Leaves	Encyclopaedia Britannica	1936	Good
16. Plant Growth	Encyclopaedia Britannica	1931	Good
17. Plant Traps	Encyclopaedia Britannica	1931	Good
18. Pond Insects	Encyclopaedia Britannica	1932	Good
19. Reptiles	Eastman-Encyclopaedia Britannica	1932	Good
20. Roots of Plants	Encyclopaedia Britannica	1931	Good
21. The Snapping Turtle	Encyclopaedia Britannica	1940	Good
22. Thrushes and Relatives	Encyclopaedia Britannica	1938	Good

Farm and Garden

1. Gardening	Encyclopaedia Britannica	1940	Good
2. Irrigation Farming	Encyclopaedia Britannica	1939	Good
3. The Orange Grower	Encyclopaedia Britannica	1939	Good
4. Science and Agriculture	Encyclopaedia Britannica	1939	Good
5. The Truck Farmer	Encyclopaedia Britannica	1939	Good
6. The Wheat Farmer	Encyclopaedia Britannica	1938	Good

Human Body and Health

1.	The Alimentary Tract	Encyclopaedia Britannica	1938	Good
2.	Before the Doctor Comes	American Red Cross	1942	Good
	Arm Fractures			
	Artifical Respiration			
	How to Control Bleeding			
	Leg Fractures			
3.	Body Defenses Against Disease	Encyclopaedia Britannica	1937	Good
4.	Cancer—Its Cure and Prevention	Teaching Film Custodians	1937	Good
5.	Digestion of Foods	Encyclopaedia Britannica	1938	Good
6.	The Eyes and Their Care	Encyclopaedia Britannica	1941	Good
7.	First Aid Procedures	Encyclopaedia Britannica		Good
	Care of Minor Wounds		1932	Good
	Carrying the Injured		1932	Good
	Control of Bleeding		1932	Good
	Wounds and Fractures		1941	Good
8.	The Heart and Circulation	Encyclopaedia Britannica	1937	Good
9.	Man's Greatest Friend	Teaching Film Custodians	1938	Good
10.	Mechanism of Breathing	Encyclopaedia Britannica	1936	Good
11.	The Nervous System	Encyclopaedia Britannica	1937	Excellent
12.	One Against the World	Teaching Film Custodians	1939	Good
13.	Reproduction Among Mammals	Encyclopaedia Britannica	1937	Good
14.	Tuberculosis, Its Diagnosis and Treatment	Encyclopaedia Britannica	1941	Excellent
15.	The Work of the Kidneys	Encyclopaedia Britannica	1940	Good

Safety and Guidance

1.	Bicycling with Complete Safety	Films of Commerce	1938	Good
2.	Finding Your Life Work	Vocational Guidance	1940	Good
3.	The Fireman	Encyclopaedia Britannica	1939	Good
4.	Juvenile Delinquency	March of Time	1936	Good
5.	Man at the Wheel	March of Time	1938	Good
6.	The Policeman	Encyclopaedia Britannica	1940	Good
7.	Safety in the Home	Encyclopaedia Britannica	1940	Good
8.	Safety on the Highway	March of Time	1935	Good
9.	Sounding the Alarm	Aetna	1937	Good
10.	Speaking of Safety	Films of Commerce	1937	Good

This list of fifty-eight titles is not intended as a complete list for biological science but as a basis or a start toward evaluating films for this subject.

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President's Page

Another Year for ABT—First Aide to NABT

With this issue the eighth year of publication of *The American Biology Teacher* comes to a close. Sixty-four issues of increasing value and interest have been published.

I. Alex Herskowitz, its first editor, laid the foundation well. Then Edward C. Colin carried on for several months. These men gave unstintingly of time and effort toward developing the journal, whose function was dedicated to serve the needs of biology teachers. Much unseen growth was taking place during those formative years—development of policies, standards, and methods—and often criticism, which after all was the stimulus and guiding influence, must have been discouraging. The type of journal it was to become must have caused "growing pains"; because the growth has been rapid, if consistent. These two men, then, carried it through a part of its most critical period. John Breukelman, who took over the job as editor in 1942 caught the paper at a time when its financial backing was at low ebb; he has carried it through the war period with its shortages' headaches; and he has furthered the basic policies, building an ever firmer and sounder basis with each issue.

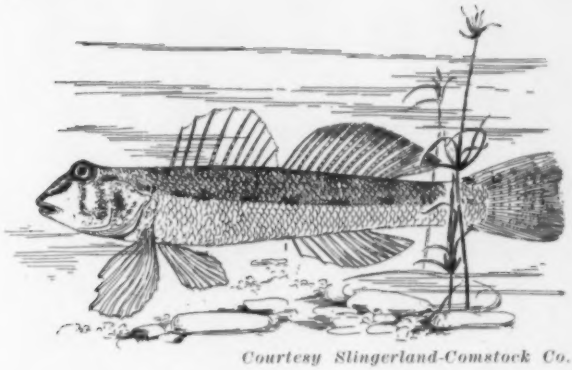
Of course, *The American Biology Teacher* has not reached "its growth." We hope that it never does, because then it will lose some of its freshness, its informal appearance and variety. These are what, in a large part, inspire the average classroom teacher. To each and every editor there should come a challenge to keep alive the spirit which these of the first eight years have so wonderfully kindled.

No matter how well done and useful a journal may be, it cannot survive without a sound financial backing. This has been splendidly managed by J. S. Mitchell, A. A. Fried, Charles B. Price, and O. D. Roberts; and to them we ascribe the credit for putting this whole project before the public. We thank the many firms who have cooperated with our managing editors; the subscribers, whose memberships in THE NATIONAL ASSOCIATION OF BIOLOGY TEACHERS have provided a large portion of its finances and, above all, a motive for carrying on; the membership directors and workers who have advertised NABT and *ABT;* and last but not least the many contributors, who by their generous writing have made possible a selection of material of unestimable value.

What has *The American Biology Teacher* achieved? Others could probably enumerate, better than the writer, a great number of instances. Space permits these general considerations: It has brought to its readers news of activities of other teachers and of groups; it has been the mouthpiece of THE NATIONAL ASSOCIATION OF BIOLOGY TEACHERS; and above all has achieved its primary aim remarkably well, namely "to be dedicated to the objectives of NABT."

As an aide to NABT, *The American Biology Teacher* has helped that organization to reach a greater degree of development and popularity. This popularity has been demonstrated by the consistent increase of interest shown in the Association; by a growth in membership; and by its own recognition among other existing organizations. Contacts have been established with the American Association for the Advancement of Science, The National Conference for Cooperation in Health Education, Friends of the Land, National Science Teachers Association, The American

(Continued on page 199)



Courtesy Slingerland-Comstock Co.

JUNE 1946

1. Carl Guthe, New York Museum Dir., b. 1893		16. A "blind spot." See below	
2. Carl Wiegand, Plant taxonomist, b. 1873		17. Wm. Augustus Conklin, Animal importer, d. 1913	
3. Aristides Agramonte, Entomologist, b. 1869		18. F. A. Wetmore, Ornithologist, b. 1886	
4. Charles C. Abbott, Biologist, born 1843		19. Guy West Wilson, Mycologist, b. 1877	
5. Walter Clyde Allee, Zoologist, born 1885		20. J. Andrew Drushel, Nature study, d. 1940	
6. W. J. Wright, 4–H Club leader, b. 1881		21. Vernon Bailey, Mammalogist, born 1864	
7. Clark-McNary Forest P[illegible]ey Act, 1924		22. P. A. Warren, Botanist, born 1893	
8. Karl August Bottinger, Anthropologist, b. 1760		23. Alfred C. Kinsey, Biologist, born 1894	
9. American Red Cross organized 1881		24. Dillon Wallace, Nature writer, b. 1863	
10. A "blind spot." See below		25. N. L. Britton, Botanist, died 1934	
11. L. O. Howard, Entomologist, born 1857		26. Gilbert White, Nature essayist, died 1793	
12. Frank Chapman, Ornithologist, b. 1864		27. Otto Herman Heugaman, Ornithologist, b. 1835	
13. T. G. Watson, Agriculturist, b. 1890		28. Camp Arey first to take girls, in 1892	
14. Paul Errington, Biologist, born 1902		29. William Mayo, Physician, b. 1861	
15. W. A. Whiting, Biologist, born 1890		30. Ralph King, Wildlife-forester, b. 1900	

For the best suggestions for either of the "blind spots" sent to E. L. Palmer, 206 Oak Hill Road, Ithaca, New York, a booklet on Animal Pets and other material will be sent free. Other contestants will be sent materials suggested by the illustration above.

JULY 1946

1.	JohnW. Scott, Zoologist, born 1871	17.	J. W. Wilson, Biologist, born 1896
2.	Marinus Westweld, Forester, born 1889	18.	Gilbert White, Essayist, born 1720
3.	Bryant Walker, Zoologist, born 1856	19.	Walter Hess, Zoologist, b. 1890
4.	John C. Branner, born 1850	20.	Sir Richard Owen, Biologist, b. 1804
5.	Leo Couch, Wildlifer, born 1896	21.	Homer D. House, Botanist, born 1878
6.	Alexander Wilson, Ornithologist, b. 1766	22.	F. H. Woods, Zoologist, b. 1898
7.	A "blind spot." See below.	23.	C. C. Adams, Ecologist, b. 1873
8.	F. A. Waugh, Horticulturist, b. 1869	24.	K. W. Woodward, Forester, born 1881
9.	Helen L. Wikoff, Biochemist, born 1900	25.	P. R. White, Plant physiologist, b. 1901
10.	Franklin D. Barker, Zoologist, d. 1936	26.	A "blind spot." See below.
11.	William Brewster, Ornithologist, d. 1919	27.	Edith M. Patch, Entomologist, born 1876
12.	Henry David Thoreau, Essayist, born 1817	28.	C. J. Drake, Iowa Entomologist, b. 1885
13.	Edward F. Bigelow of Agassiz Assoc., d. 1938	29.	C. William Beebe, Explorer, born 1877
14.	E. A. Wolf, Zoologist, b. 1882	30.	Richard Gerstell, Wildlife, born 1886
15.	Lee Dice, Mammalogist, b. 1887	31.	Edward Breck, Anti-steel trap, b. 1861
16.	Henry Welch, Public Health, born 1902		

For the best suggestions for either of the "blind spots" sent to E. L. Palmer, 206 Oak Hill Road, Ithaca, New York, a copy of George Green's "Survey of Nature" (lists $3) will be sent. Other contestants will be sent other forms of recognition.

AUGUST 1946

1.	J. R. Watson, Entomologist, born 1874	17.	C. E. Wilson, Entomologist, born 1890
2.	W. B. White, Food chemist, born 1884	18.	Our "blind spot." See below.
3.	R. S. Woglum, Entomologist, born 1882	19.	Thomas Barbour, Naturalist, b. 1884*
4.	Austin Craig Apgar, Dendrologist, b. 1838	20.	Plant Quarantine Act takes effect 1912
5.	Amos William Butler, Ornithologist, d. 1937	21.	A. P. C. Ashhurst, Surgeon, born 1876
6.	Francis D. Curtis, Science ed., b. 1888	22.	Louis Agassiz Fuertes, Artist, killed 1927
7.	Charles May, Ophthalmologist, b. 1861	23.	Georges Leopold Cuvier, Naturalist, b. 1769
8.	Vernon Kellogg, d. 1937 Stuart Gager, d. 1943	24.	Anna B. Comstock, Nature Study, d. 1930
9.	William Finley, Conservationist, b. 1876	25.	Claude Leister, Ornithologist, b. 1893
10.	L. E. Yocum, Botanist, born 1890	26.	J. Leonard Corning, Neurologist, b. 1855
11.	Gifford Pinchot, Forester, b. 1865	27.	Gustaf Linstrom, Paleontologist, born 1829
12.	John Craig, Horticulturist, died 1912	28.	George Jeffers, NABT, ex-president, b. 1897
13.	T .W. Whitaker, Geneticist, born 1905	29.	Logan Bennett, Wildlifer, born 1907
14.	Ernest T. Seton, Mammalogist, b. 1860	30.	Meyer Bodansky, Bio-chemist, born 1896
15.	John Torrey, Botanist, born 1796	31.	Charles B. Ball, Sanitarian, born 1854
16.	P. W. Claassen, Biologist, died 1937	*	Suggested by E. Mildred Crane of Lancaster, Mass.

For best suggestions submitted for the blind date sent to E. L. Palmer, 206 Oak Hill Road, Ithaca, New York, a copy of Mrs. Comstock's "Trees at Leisure" will be sent free. Other contestants will receive suitable recognition.

After considerable discussion based on reports received from the calendar pages thus far, it was decided to include the summer months even though THE AMERICAN BIOLOGY TEACHER is not issued through the summer. The December calendar, in the November issue, will complete the 1946 series. If you have used this feature, or if you think it should be continued, tell either Dr. Palmer or the editor; if you don't think it a desirable feature for your journal, ditto. Some have suggested that the calendar be made a part of a four-page section devoted to news items and other matters of temporary interest, so that this section might be removed without disturbing the remainder of the issue. Any other suggestions for the improvement of the calendars are in order. Can you think of date items, preferably not births and deaths, to send to Dr. Palmer?

SEPTEMBER 1946

1.	Anna B. Comstock, Nature study, b. 1854	16.	Joseph S. Illick, Forester, born 1884
2.	F. L. Whitney, Paleontologist, born 1878	17.	A "blind date." See below.
3.	T. Gilbert Pearson, Ornithologist, d. 1943	18.	W. E. Button, Entomologist, born 1868
4.	Hudson River, Discovered 1609	19.	W. W. Wiggin, Horticulturalist, born 1899
5.	H. H. Whetzel, Plant pathologist, b. 1877	20.	Hal C. Yingling, Biologist, born 1890
6.	Luther S. West, Zoologist, born 1899	21.	Louise B. Wallace, Zoologist, born 1867
7.	C. T. Vorhies, Entomologist, born 1879	22.	Victor Shelford, Ecologist, born 1877
8.	Mary Booth, Microscopist, born 1843	23.	Autumn begins in Northern Hemisphere
9.	Elliot Coues, Naturalist, born 1842	24.	William Baerg, Entomologist, born 1885
10.	Elliot R. Downing, Science ed. d. 1944	25.	C. E. Woodworth, Entomologist, born 1897
11.	Sir James Jeans, Sci. philosopher, b. 1877	26.	Sequoia National Park established 1890
12.	H. C. Cowles, Plant ecologist, died 1939	27.	Ira Gabrielson, Wildlifer, born 1889
13.	Rudolph Anderson, Biochemist, born 1879	28.	"A blind spot." ? See below
14.	E. S. Wolfe, Horticulturalist, born 1898	29.	Leonard Barron, Garden editor, born 1868
15.	Frank Lutz, Entomologist, born 1879	30.	C. H. Hawes, Anthropologist, born 1867

For the best suggestion submitted for the blind dates sent to E. L. Palmer, 306 Oak Hill Road, Ithaca, New York, a copy of "Music in the Out-of-Doors" will be sent free. If this is accompanied by a new membership in NABT, a copy of Green's "Survey of Nature" will be sent also. Suitable recognition will be given other contestants not adjudged winners.

(*Continued from page 194*)

Botanical Society, a number of equipment and supply houses, and perhaps others at one time or another.

The work of secretary-treasurer and of membership chairmen has always been heavy, but they have served without pay; that of others who have helped on committees and projects has, from time to time taken energy and time of many others. The unnamed helpers and assistants have, likewise, worked without recompense, and often without remuneration for their actual expenses, to help build THE NATIONAL ASSOCIATION OF BIOLOGY TEACHERS into a fine, strong, helpful organization.

To those who have worked with me during this year, I want to express my deepest appreciation. It has been an inspiration and great experience to have had an active part in an organization of so many dependable, willing workers.

PREVO L. WHITAKER

WE'RE AMERICANS ALL

The phrase: "We're Americans All" means: *we live to serve*. This, I think, has become the universal definition for Americans. If this is true, then you have at long last a nation which epitomizes the Scriptural declaration: It is better to give than to take; "I am come to serve, not to be served unto." The billions of dollars of outright gifts to suffering humanity during and after World Wars I and II speak eloquently of America's nature! It is not only long distant calls in foreign lands that are heeded, but national and local, everywhere, all the time. No need is too big or too small to attract our nation's sympathetic attention and interest.

We as members of THE NATIONAL ASSOCIATION OF BIOLOGY TEACHERS are united as such to help one another professionally. Our journal, *The American Biology Teacher,* aims to serve teacher members and their pupils, to lift the outlook of the general reader above personal material interests as primary and to direct it toward helpful service. In fact, the chief objective of many members is to make the journal indispensable in the classroom of all schools from the junior high school through high school, college or university. To join The National Association and to receive *The American Biology Teacher* while one is an active teacher is, of course, understandable, indicative of real professional decorum, for it is not compulsory at all; and it demonstrates the teacher's desire to render an enriched service without extra remuneration; but of still greater significance is the fact that membership in the NABT and the continued reading of the ABT are of permanent cultural value.

Those who have studied biology seriously and have tried to teach it are better prepared to hear the voice of nature and understand it than are those who have not. If I were to change my profession, I would still want to read biological literature, because it is the foundation and much of the superstructure of culture.

What one gets for belonging is directly proportional to one's investment: using the journal, radiating its spirit to others, building up interest in the study and the teaching of nature, not only while teaching in a classroom, but as long as man is potentially greater than the beast and more important than the inanimate, the inorganic, the physical world. Nothing can be more inspiring and helpful to persons who leave the field of active biology teaching, no matter what the new job may be, than to keep up the contact with active biology teachers through continued membership in the NABT and the faithful use of the ABT. In this way, one would also be participating in building a stronger and stronger power in our country. We live to serve. We do this because we're Americans all. The benefits derived from membership are manifold, and are directly proportnonal to one's investment.

H. P. K. AGERSBORG

CHANGE IN FISCAL YEAR

Among the more important actions taken at the St. Louis Meeting was to change the fiscal year so that it will correspond to the calendar year instead of to the school year. This change will make possible more accurate financial and membership bookkeeping and will more closely coordinate the Association's activities with the National Meetings. The mechanics of making the change will be as follows: All members will be billed for 75¢ for the balance of 1946 and for $2.00 for 1947; thereafter the fiscal year will correspond to the calendar year, with membership extending from January 1 to December 31. Volume IX of *The American Biology Teacher* will include the remaining numbers of 1946 and all of 1947; thereafter each volume will start with the January number.

If you have not already done so renew your membership now for one or more years.

Laboratory Aids

EDITOR'S NOTE—In response to many requests that related items be printed together, we are presenting under one head two brief articles by Mr. Hamilton and four by Rev. Baechle, both former contributors. In the future we shall group related items whenever such procedure will not delay publication of good articles.

A Collecting Jar for Student Use

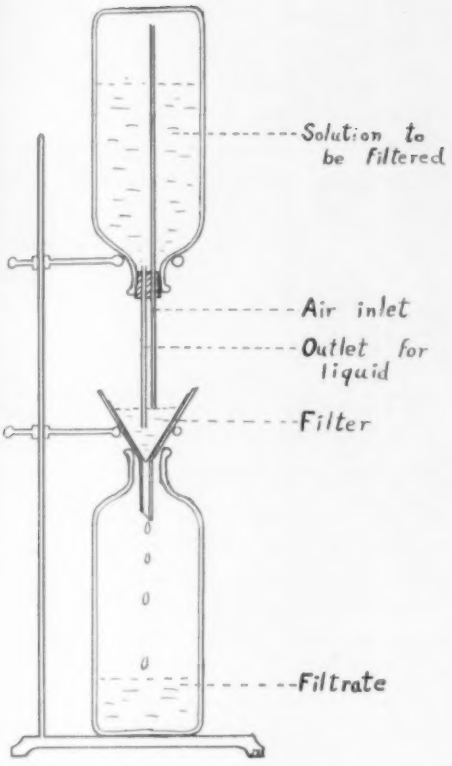
The collecting jar shown in the figure is designed to be issued to the student for use on field trips. The chief advantage lies in its adaptability, since it will hold either aquatic or terrestrial forms.

An ordinary pint Mason jar is used with one of the pressure-sealing covers which do not require rubber rings. These covers consist of two parts, a disk of metal, which is the true jar cover, and an outer screw-ring, which is used to seal the cover. As will be seen from the figure, a circular piece of wire screen is soldered to the top of the screw-ring. To prevent the wires from becoming caught on the clothing, the screen should be soldered around the entire circumference, rather than spot-soldered. A coat of thin enamel prevents rusting where the galvanized coating has been burned off in the soldering process. The outer edge of the cover should be filed down slightly, to allow it to slip in and out of the outer band easily.

The jar, with only the screen-covered screw-ring, may be used for collecting air-breathing forms, and later for observing them. Both parts of the cap are used when the student collects aquatic forms. When the cover is held tightly to the jar by the outer ring, no water will leak out.

A Constant-level Device for Filtering

Before formalin is used a second or third time for preserving animals for dissection, it is usually desirable to filter it. The presence of protein material in the solution makes filtering a slow process. A method which is sometimes used by chemists may be adapted for this process, and is shown in the figure. Two two-liter acid bottles are used. The one containing the substance to be filtered is fitted with a two-hole rubber stopper and glass tubing as shown. The other bottle serves to receive the filtered solution. When the bottle containing the substance to be filtered is inverted over the funnel, air enters the long tube, allowing the solution to run out the short tube until the level in the filter is above the air inlet. When this level drops, more liquid enters the filter. A similar arrangement, using siphon tubes and



five-gallon carboys, may be used for larger volumes.

JOHN MEACHAM HAMILTON,
Asheville School for Boys,
Asheville, North Carolina

Microscope Slide Warmer*

A slight amount of heat is required to flatten paraffin-cut sections on a slide. The illustration shows a quickly made slide warmer which will furnish this heat. A five-pound cheese box, or any other box of convenient size, is wired with a porcelain socket and a 25-watt, long, showcase bulb. A sliding lid for the box is made by cutting a piece of

galvanized iron just as wide as the top of the box, but one inch longer than the box. A half inch flange is bent at each end of the lid so that it will fit the box snugly.

If the box is not too large, the 25-watt bulb will furnish just enough heat to flatten the paraffin sections, which are of course floating on a few drops of water, without melting the paraffin. If one cares to, he may use a dim-a-light socket with a bulb of higher wattage. This will permit varying the amount of heat because a dim-a-light socket is really a four or five stage rheostat compactly made.

This slide warmer will likewise be found advantageous in staining bacteria whenever heat is required during the staining process. The author has used this device with success in obtaining a flagellar stain of the Typhoid bacillus by the Loeffler staining method.

A Simple Cover-glass Weight

After a cover-glass has been cemented to a microscope slide with a drop of balsam, a slight weight should be placed on the cover-glass to squeeze the excess balsam out, and to hold the cover-glass in place until the balsam has dried. An inexpensive and useful device for doing this can be made with very little trouble. A solid iron curtain rod, one-fourth or even three-eighths of an inch in diameter is cut into pieces three inches long. These pieces, which act as the weights, will weigh from one to one and one-half

* Editor's note: The series of articles by Rev. Baechle, together with the illustrations by the author, are reproduced with permission from Vol. 1, Bull. 2, and Vol. 2, Bull. 3, of *The American Society of Amateur Microscopists.* The photomicrograph of the mouse's eye is reproduced by permission from the May, 1939, issue of *Nature Magazine.*

ounces. A rack in which these rods may slide freely, is made as shown in the illustration. The base of the rack as well as the upright at each end are made of soft wood. The two cross bars are strips of iron or brass one inch wide and one-eighth inch thick. Holes just large enough to receive the weights are drilled through both cross bars. These holes are spaced about one inch and a quarter apart. The uprights, to which the cross bars are attached with screws, extend two and one-half inches above the base. The lower of the two cross bars is one inch below the upper one. The weights are then placed through the holes and a rubber cap, such as is used for a pencil eraser, is used to cover the lower end of each weight. This rubber cap acts as a shock absorber and prevents the weight from scratching or cracking the cover glass.

If the rack is to hold many slides, a long bolt and two pieces of metal tubing may be used to give added support to the center of the cross bars. Instead of curtain rod weights, small vials filled with mercury or melted type metal may be used. In this case the vials should be placed in the holes of the cross bars in an inverted position so that the cork in the mouth of the vial may act as a shock absorber.

Illuminator for a Dissecting Microscope

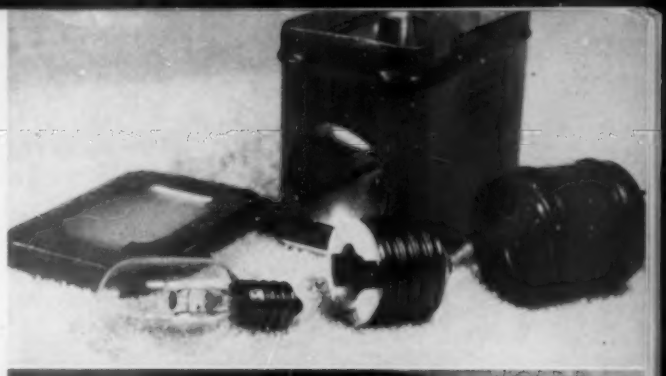
While there are several types of illuminators for dissecting microscopes on the market, the one here illustrated will prove very efficient, and it is not expensive to make. An attempt to sell the idea to a scientific supply house several years ago brought the following reply, "While we realize that your idea would provide the utmost in convenience, we hesitate to place it on the market because we feel that few would be willing to pay $15.00 which we would be obliged to charge for the article."

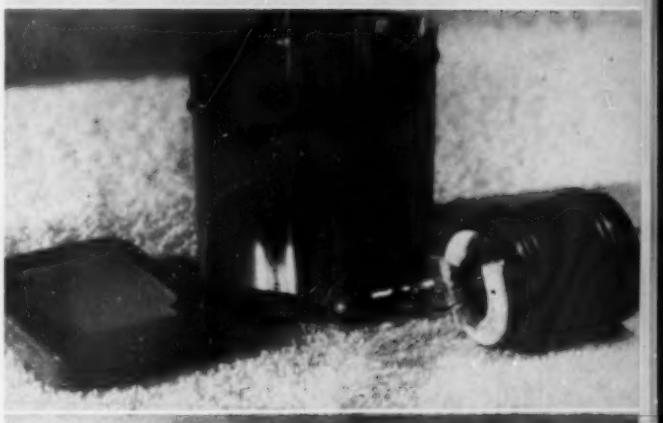
The illuminator costs only about 60¢ and a little time to make. It consists of two small 15-watt 110-volt bulbs (such as are used in night-lights), wired in parallel and attached to a small piece of wood which moves up and down as the scope is focused. Small tin tubes, such as used to contain bouillon cubes, are used as reflectors and also to prevent the light from disturbing the one using the scope. The small porcelain sockets can usually be obtained from a radio supply house.

The variety and models of dissecting microscopes makes it impossible to give exact dimensions for making this useful gadget, but only a little ingenuity is necessary to adapt one to any particular scope, and the results obtained from using such illumination are well worth while.

A Sub-stage Lamp

Of the several types of illumination for microscopic work, that furnished by a sub-stage lamp is one of the best. It is compact and furnishes even illumination of the field. Such a lamp can easily be made in a few minutes and at a nominal cost. A tin box approximately $2'' \times 2\frac{3}{4}'' \times 2\frac{1}{2}''$ is used as the housing for the lamp. Sodium bicarbonate, Epsom salts and similar products are frequently sold in a tin box which will serve the purpose very well. An electric socket with a plug base, a socket reducer, and a 15-watt small bulb with candelabra base are necessary. If the socket reducer cannot be obtained, an ordinary 10-watt bulb with standard base could be used as a substitute. In one end of the tin box a round hole is cut with a pair of scissors—preferably a curved pair. Into this hole the screw threads of the outer edge of the socket can be engaged. The plug end of the socket will fit into any extension cord. A hole is then cut in the lid of the box in such a way that the edges of two sides of this hole can be bent to form flanges which will hold a small piece of frosted glass in place. The shiny tin of the bottom of the box acts as a reflector, although one or more pieces of a broken mirror may be glued to the bottom and sides of the box at 45-degree angles to reflect a greater amount of light.

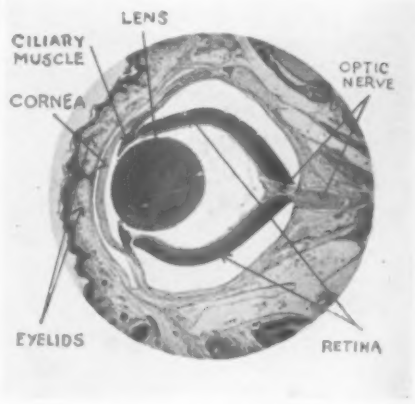




Instead of the socket and reducer, a standard night light, the reflector shade of which can be painted with aluminum paint, may prove even more serviceable because it has an on-and-off switch built into it. The tin-can housing may be

perforated with several small holes to ventilate it and keep it cooler.

Such a lamp may be used with or without the reflecting mirror of the microscope in working position. When the mirror is removed or swung out of place the lamp will slide below the stage of the microscope. The results to be obtained with such a home-made lamp are comparable to those obtained from expensive sub-stage lamps which have been on the market for years. It was with this kind of home-made lamp placed below the stage of the microscope that the photomicrograph of a mouse's eye was made.



Rev. John W. Baechle, C.PP.S.
St. Joseph's College
Collegeville, Indiana

Membership

The past year has again seen a healthy increase in membership. We now have members in every state except Nevada. The foreign membership is steadily increasing. Our greatest gain is in New York with Illinois second. Of the total of 2,102, renewals number 1,303 and new members 799. Illinois and New York also lead in the number of new members. Also note that some states have more than doubled their membership. We are much pleased to have gained 9 from Utah. This year's increase is largely due to the untiring efforts of Dr. H. P. K. Agersborg, national membership chairman, and his efficient corps of regional and state chairmen.

	1945	1946
Alabama	22	20
Arizona	6	6
Arkansas	4	6
California	129	123
Colorado	17	21
Connecticut	32	41
Delaware	3	6
Dist. of Columbia	25	28
Florida	8	8
Georgia	7	10
Idaho	4	4
Illinois	208	244
Indiana	81	83
Iowa	44	37
Kansas	35	35
Kentucky	18	18
Louisiana	14	11
Maine	6	10
Maryland	30	43
Massachusetts	90	86
Michigan	89	112
Minnesota	34	31
Mississippi	7	11
Missouri	25	47
Montana	11	11
Nebraska	13	26
Nevada	0	0
New Hampshire	16	14
New Jersey	55	66
New Mexico	3	8
New York	158	190
North Carolina	25	34
North Dakota	6	7
Ohio	158	162
Oklahoma	12	15
Oregon	33	42
Pennsylvania	169	169
Rhode Island	13	9
South Carolina	7	6
South Dakota	6	11
Tennessee	13	22
Texas	30	33
Utah*	0	9
Vermont	4	8
Virginia	50	43
Washington	23	27
West Virginia	20	30
Wisconsin	67	81
Wyoming	2	3
Alaska	1	1
Australia	0	1
Canada	10	14
Canal Zone	2	2
Hawaii	2	3
India	1	1
Mexico	1	1
Puerto Rico	5	9
South America	3	1
Sweden	0	1
South Africa	0	1
Total	1859	2102

ST. LOUIS MEETING

During the convention held March 29–30 in Saint Louis The National Association of Biology Teachers made some very important progress. We were fortunate in having Dr. Otis W. Caldwell, general secretary of AAAS, as our speaker. Besides giving us a splendid address, Dr. Caldwell provided us with some information concerning the AAAS attitude toward our organization and also sufficient reason to believe that our request for representation on *The Cooperative Committee on Science Teaching* would be granted. The Cooperative Committee is the science education instrument of the AAAS. We have been trying to have official representation thereon for over a year, but we have been blocked by misunder-

standings and lack of inside information. We feel that this move is one of definite improvement for our own service organization.

Another trend which is coming naturally after nearly eight years of mutual cooperation is that toward affiliation of *The American Nature Study Society* with NABT. There has always been such a natural and close connection between the two societies that we feel both will benefit greatly by an official relationship.

Results of our cooperation with NSTA on certain of their outlined projects were gratifying. We are looking forward to our December meeting with a great deal of interest and enthusiasm.

Several of the papers presented on the program will appear in future issues of the Journal.

ELECTION NOTICE

(*The Nominating Committee appointed by the Executive Board has submitted the following list of nominees for offices of The National Association of Biology Teachers for the ensuing year. The Secretary-Treasurer is sending ballots to all members.*)

For President-elect:

HOWARD H. MICHAUD, Assistant Professor of Conservation, Department of Forestry, Purdue; A.B., M.A., Indiana; teacher of high school biology, Fort Wayne, Ind., 1925–1945; Chief Naturalist, Indiana State Parks, summers 1934–1944; member Conservation Education Committee of NABT and Izaak Walton League; author: *Conservation of Fishes* (ABT, Apr. 1944), *Importance of Field Work for the High School Teacher* (ABT, Mar. 1941), *Nesting Studies in Indiana State Parks* 1938 and 1942, *Annotated Bibliography on Conservation* 1944; now engaged in developing a program in Conservation Education for Indiana.

BETTY LOCKWOOD, Redford High School, Detroit, Michigan, now on leave to do experimental work in Nutrition Education and to study at Harvard School of Public Health; B.S., Wayne, M.A., Cornell, graduate work, Chicago and Harvard School of Public Health; teacher of elementary and general science and biology in Detroit public schools; guest editor, Ornithology Issue of ABT; member Michigan State Curriculum Committee on Conservation; conducted experimental work on poliomyelitis education for high school level; served as 2nd and 1st vice-president of NABT.

For First Vice-President:

ALAN A. NATHANS, teacher of biology, physiography and general science, Christopher Columbus High School, New York City; B.S., M.A., New York University; director of adult education, Christopher Columbus High School; Associate Editor of ABT, in charge of reviews of secondary texts, since 1938; Assistant Managing Editor since 1943; former Business Manager, *Teaching Biologist;* author of several pamphlets on private camping and aquatics.

LUCILE EVANS, Biology Department, Milwaukee State Teachers College, Wisconsin; A.B., Milwaukee-Downer, M.S., Chicago; teacher in Wausau and Oshkosh high schools; has served as secretary and president of biology section of Wisconsin Education Association; 2nd vice-president, NABT and 3rd year as Wisconsin chairman, Membership Committee of NABT; Chairman of Placement Investigating Committee, NABT; member: AAAS, American Fern Society, Wisconsin Society for Ornithology, Milwaukee Entomological Society.

For Second Vice-President:

BROTHER H. CHARLES, F.S.C., Head of Biology Department, St. Mary's College, Minona, Minnesota; 13 years' experience in high school biology; B.S., M.S., Ph.D., Chicago; DeLaSalle Institute; Charter Member, NABT, guest editor, Health and Hygiene Issue of ABT and contributor of numerous articles, Associate Editor since 1940; Founder Chicago Catholic Science Teachers Association; member of Delta Epsilon Sigma and Sigma Xi; author of *Biology* (text for Catholic High Schools), *Biology Laboratory Manual, Biology Handbook for Teachers;* hobbies: photography and fossils.

RUTH BEATTY, biology teacher, Grant High School, Portland, Oregon; B.S., Oregon State, about 50 hours graduate work at California, Washington, Oregon; 15 weeks' botany field work of western states, University of Washington; teacher in Astoria High School 5 years; 3 years as Oregon State Membership Chairman of NABT; Regional Chairman, one year; served as Forest Lookout during the war; hobbies: birds, ferns, forestry.

For Secretary-Treasurer:

M. A. RUSSELL, present incumbent.

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Annual Convention of the

NATIONAL ASSOCIATION OF BIOLOGY TEACHERS

in conjunction with

The American Association for the Advancement of Science

PROGRAM

CONCURRENT SESSION WITH AMERICAN NATURE STUDY SOCIETY

SUNDAY, DECEMBER 28

EDWIN WAY TEALE, Pres. American Nature Study Society
DR. E. LAWRENCE PALMER, Pres. National Association of Biology Teachers
Presiding

Field trip to the dune area
(See American Nature Study Society Program)

MONDAY, DECEMBER 29

9:00 a.m.; Rooms 109, 110; Sherman Hotel
E. LAWRENCE PALMER, *Presiding*

Executive Board Meeting
1:30 p.m.; Rooms 109, 110; Sherman Hotel
E. LAWRENCE PALMER, *Presiding*

Representative Assembly Meeting

TUESDAY, DECEMBER 30

Symposium on Teaching Behavior in High School Biology
West Room, Sherman Hotel

HOWARD H. MICHAUD, *Presiding*

What important living behaviors should be taught in the high school biology course?
What are the chief biological considerations in the study of human behavior?

MORNING MEETING

9:00— 1. PALMQUIST, EDWARD M., *The Nature of Plant Responses to Environmental Stimuli.*
9:30— 2. MILLER, D. F., *The Use of Animal Behavior in the Teaching of Biology.*
10:00— 3. EMLEN, JOHN T., JR., *Importance of the Study of Bird Behavior.*
10:30— 4. ALLYN, WILLIAM P., *Intelligence Among Mammals, or the Animal Mind.*
11:00— 5. CHASE, WARREN, *The Relation of Animal Behavior to Wildlife Conservation.*
11:30— 6. PALMER, E. LAWRENCE, *Biological Behavior and Society.*

AFTERNOON MEETING

West Room, Sherman Hotel

HOWARD H. MICHAUD, *Presiding*

2:00— 7. NANCE, R. DALE, *Contributions of Psychology to the Knowledge of Human Behavior.*
2:30— 8. SMILEY, DEAN F., *Contributions of Medicine to Human Health.*
3:00— 9. RIDDLE, OSCAR, *Genetics and Human Behavior.*
3:30—10. IVEY, JOHN E., *Contributions of Sociology to the Study of Human Behavior.*
4:00—11. KASAK, MICHAEL, *Contributions of Psychiatry to Mental Rehabilitation.*

EVENING MEETING

Louis 16th Room, Sherman Hotel

E. LAWRENCE PALMER, *Presiding*

6:30—Banquet Speaker—DR. A. L. WINSOR, *Problems of Selecting and Encouraging Science Teachers.*